

Note: Slope of bottom slab shall be placed at natural stream gradient.

If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

VARIABLE	EQUATION	DIM.	VARIABLE	EQUATION	DIM.
"S"	---		"Q"	$TX(\cos 20^\circ)$	
"HT"	---		"R"	$P(\cos 20^\circ)$	
"TS"	---		"T"	$G(\sec Z)$	
"BS"	---		"U"	$(R + M)(\tan 20^\circ)$	
"TX"	---		"V"	$HT + TS - 12"$	
"TI"	---		"W"	$2A + B + C + D + E + SS$	
"A"	---		"X"	$3" + TX(\tan Z)$	
"B"	---		"Y"	$TX(\sin 20^\circ)$	
"C"	---		"Z"	Skew Angle	
"D"	$II + MM + RR$		"AA"	$(F/2)(\tan Z)$	
"E"	$G + O + 20"$		"BB"	$(A + B)(\sec Z)$	
"F"	$2S + 2TX + TI$		"CC"	$(A + C)(\sec Z)$	
"G"	$2V$		"DD"	$R + M + N + 20"$	
"H"	$(A + C + E)(\tan Z)$		"EE"	$E(\sec Z)$	
"I"	$3"(\cos Z)$		"HH"	$20"(\sec Z)$	
"J"	$(AA + BB + DD)(\sin Z)$		"II"	$20"(\cos Z)$	
"K"	$(S + TI/2)(\sec Z)$		"KK"	$S + TI/2 + U$	
"L"	$AA + BB + CC + DD + EE$		"LL"	$(AA + BB + DD)(\cos Z)$	
"M"	$N(\cos 20^\circ)$		"MM"	$3"[\cos Z + \cos(Z - 20^\circ)]$	
"N"	$3" + TX(\tan 10^\circ)$		"RR"	$P[\cos(Z - 20^\circ)]$	
"O"	$I + YY$		"SS"	$F(\sin Z)$	
"P"	$2V[\sec(Z + 20^\circ)]$		"YY"	$TX(\sin Z)$	

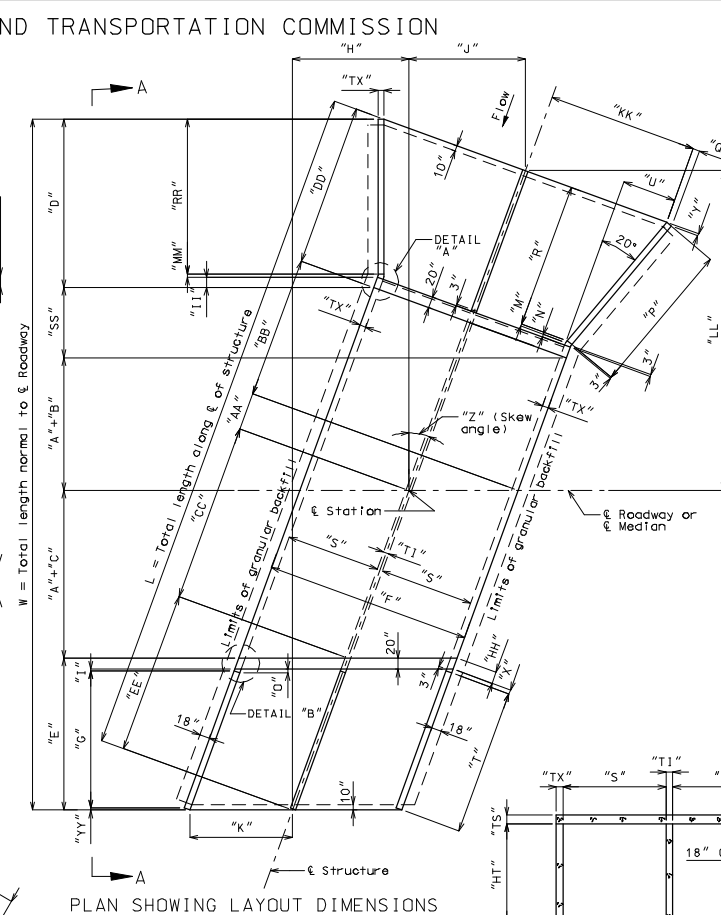
\* Design fill height is the distance from top of earth fill or roadway to the top of the top slab.

ESTIMATED QUANTITIES		FINAL QUANTITIES
Class 4 Excavation	cu. yard	
Removal of Bridges	ump sum	
Class B-1 Concrete (Culverts-Bridge)	cu. yard	
Reinforcing Steel (Culverts-Bridge)	pound	

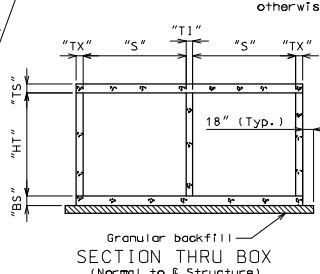
Designed  
Detailed  
Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No.      of



HYDROLOGIC DATA	
Drainage Area = _____	(sq. mi.)
Design High Water (DHW) Elev. = _____	
Design High Water Frequency = _____	(year)
Design High Water Discharge = _____	(cfs)
Backwater/Base Flood Data (100 year)	
High Water Elev. = _____	
Design Discharge = _____	(cfs)
Estimated Backwater = _____	(ft)
Outlet Velocity = _____	(ft/sec)
Roadway Overtopping	
Design Elev. (1' below shoulder) = _____	
Design Discharge = _____	(cfs)
Design Frequency = _____	(year)



B. M.

BRIDGE

STATE ROAD

PROJECT NO.

JOB NO.

STATE MO	DISTRICT	SHEET NO.	
ID			
NO.			
			DATE _____
R	TWP	RGE	

GENERAL NOTES:

Design Specifications:  
2002 – AASHTO 17th Edition  
Load Factor Design

**Design Unit Stresses:**  
Class B-1 concrete  $f'_c = 4,000$  psi  
Reinforcing steel (Grade 60),  $f_y = 60,000$  psi

Design Loading:  
HS20-44      HS20 Modified

Earth 120 #/ft.<sup>3</sup>  
Equivalent fluid pressure  
30 #/ft.<sup>3</sup> (Min.) - 60 #/ft.<sup>3</sup> (Max.)

All elevations shown are in feet unless otherwise noted.

The box shown below indicating whether a precast or cip box was used should be checked by MoDOT Construction personnel:

☐ Precast Box used  
☐ Cast-in-Place Box used

When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 3'-2". Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans drawing.

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

ESTIMATED REINFORCING STEEL SUMMARY		
BAR SIZE	PLAIN (LBS)	EPOXY (LBS)
4		
5		
6		
7		
8		
9		
10		
11		
TOTAL		

STD.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

STD.

STD.

310.

BOX

Date:     /     /

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